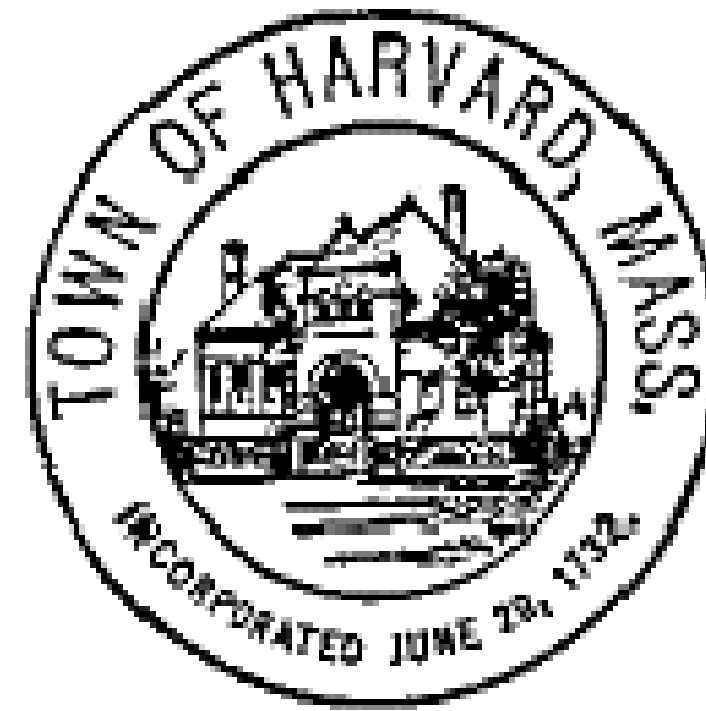


# ERV REPLACEMENT

## BROMFIELD HIGH SCHOOL

### 14 MASSACHUSETTS AVENUE HARVARD, MASSACHUSETTS 01451

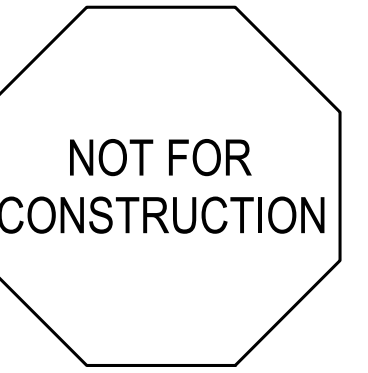


**HARVARD PUBLIC SCHOOLS**  
**14 MASSACHUSETTS AVENUE**  
**HARVARD, MASSACHUSETTS**  
**01451**

**DRAWING LIST:**

- |   |   |
|---|---|
| <p>T0.1 Title Sheet</p> <p>H0.1 Mechanical Legend, Notes, &amp; Abbreviations</p> <p>H0.2 Mechanical Schedules, Controls, and Details</p> | <p>H1.0 Mechanical Roof Demolition Plan</p> <p>H2.0 Mechanical Roof New Work Plan</p> <p>E0.1 Electrical Notes &amp; Legend</p> <p>E1.0 Electrical First Floor Demolition Plan</p> <p>E2.0 Electrical First Floor New Work Plan</p> |
|---|---|

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HVAC \* ELECTRICAL \* PLUMBING \* FIRE PROTECTION

Client:

Harvard Public Schools  
14 Mass Ave.  
Harvard, MA 01451

Submission:

CD SET 07/23/21

Revision:

Project:

**ERV Replacement at  
Bromfield High School**  
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TITLE PAGE

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T0.1

PIPING LEGEND table listing symbols for Hot Water Supply, Refrigerant Suction, Piped Condensate, etc.

VALVE LEGEND table listing symbols for Isolation Valve, Gate Valve, Globe Valve, Ball Valve, etc.

CONTROL SCHEMATIC LEGEND table listing symbols for Humidity Sensor, Temperature Sensor, Heat/Cool Thermostat, etc.

DUCTWORK LEGEND table listing symbols for Rectangular Ductwork, Round Ductwork, Flexible Connection, etc.

DAMPERS table listing symbols for Motorized Control Damper, Smoke Damper, Fire Damper, etc.

CONTROL SCHEMATIC LEGEND table listing symbols for Humidity Sensor, Temperature Sensor, Heat/Cool Thermostat, etc.

DRAWING NOTES table listing notes about neck size, air volume, and equipment designation.

EQUIPMENT TAGS table listing symbols and designations for Air Cooled Condensing Unit, Air Flow Station, etc.

AIR DEVICE LEGEND table listing symbols for Side Wall Supply Register, Supply Diffuser, Return Grille, etc.

ABBREVIATIONS table listing symbols for ACC, AD, AP, ATC, BTU, etc.

ABBREVIATIONS table listing symbols for ACCU, AFS, AHU, CP, EG, ERV, etc.

ABBREVIATIONS table listing symbols for SG, SD, RG, EGRG, SD-1A, etc.

GENERAL NOTES 1-35 detailing requirements for equipment installation, safety, and coordination.

DEMOLITION GENERAL NOTES 1-18 detailing requirements for removal of existing equipment.

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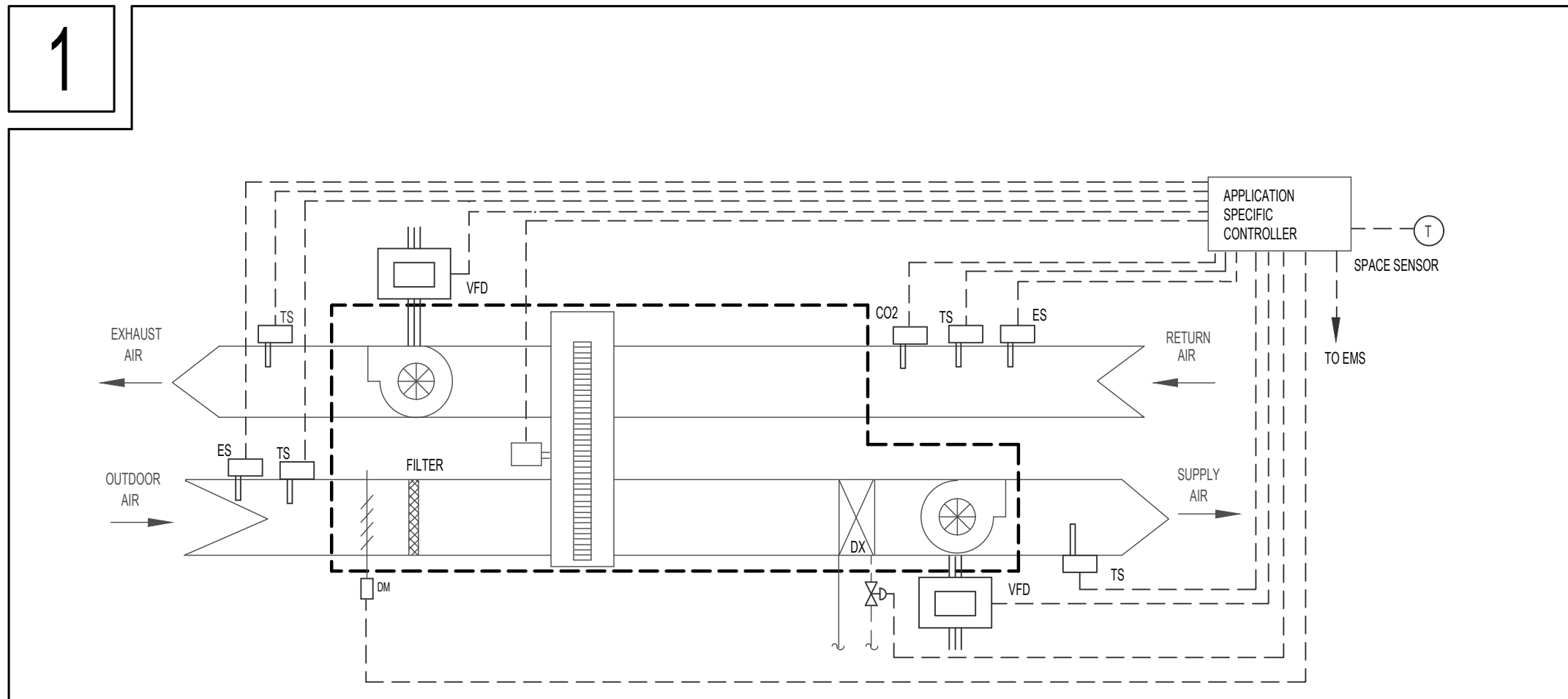
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Title: HVAC LEGEND, NOTES, AND ABBREVIATIONS  
Drawing No.: H0.1

# HVAC SCHEDULES

## HEAT RECOVERY UNIT SCHEDULE

TAG No.	LOCATION SERVED	MANUFACTURER (AS STANDARD)	MODEL NO. (AS STANDARD)	SUPPLY FAN DATA		EXHAUST FAN DATA		ENERGY RECOVERY SECTION																DX COOLING COIL DATA				ELECTRICAL DATA					REMARKS						
				CFM (OA)	ESP (IN W.C.)	RPM	HP	CFM (EA)	ESP (IN W.C.)	RPM	HP	TYPE	WINTER PERFORMANCE				SUMMER PERFORMANCE				MBH (TOT)	MBH (SENS)	EAT °F	LAT °F	FILTERS/TYPE	VOLTS	PHASE	HZ	MCA	MOP	WEIGHT (LBS)								
													CFM	EAT (DB/F)	LAT (DB/F)	CFM	EAT (DB/F)	MBH (CO/D)	CFM	EAT (DB/F)												LAT (DB/F)		CFM	EAT (DB/F)	MBH (CO/D)			
ERV-1	SEE PLANS	GREENHECK	ERCH45-15H-129-01	4050	1.0"	1544	5	4050	1.0"	1383	5	WHEEL	4050	7.4	52.2	4050	72.0	196.0	4050	90.8	76.2	79.4	67.5	4050	75	62	140.2	164.4	108.6	79.467.5	55.054.5	MERV 8/13	460	3	60	45.6	50.0	2815	PROVIDE WITH MODULATING WHEEL, FROST CONTROL, MERV 8 FILTERS (O&EA), MERV 13 FILTER (OA), WEATHERHOODS, ROOF CURB ADAPTER, MOTORIZED LOW LEAKAGE SUPPLY DAMPERS, MICROPROCESSOR CONTROLS, OA TEMP SETPOINT WHEEL, MODULATING FAN WITH FACTORY MOUNTED AND WIRED VFDs, DIRTY FILTER SENSOR (O&EA), CONDENSATE DRAIN TRAP, SERVICE RECEPTACLE, AND INTEGRAL DX COOLING W/ DIGITAL SCROLL COMPRESSOR.
ERV-2	SEE PLANS	GREENHECK	ERCH45-15H-129-01	3140	1.0"	1410	3	3140	1.0"	1209	3	WHEEL	3140	7.4	55.3	3140	72.0	162.4	3140	90.8	76.2	78.7	66.9	3140	75	62	116.1	125.7	84.5	78.766.9	54.253.9	MERV 8/13	460	3	60	32.7	40.0	2730	PROVIDE WITH MODULATING WHEEL, FROST CONTROL, MERV 8 FILTERS (O&EA), MERV 13 FILTER (OA), WEATHERHOODS, ROOF CURB ADAPTER, MOTORIZED LOW LEAKAGE SUPPLY DAMPERS, MICROPROCESSOR CONTROLS, OA TEMP SETPOINT WHEEL, MODULATING FAN WITH FACTORY MOUNTED AND WIRED VFDs, DIRTY FILTER SENSOR (O&EA), CONDENSATE DRAIN TRAP, SERVICE RECEPTACLE, AND INTEGRAL DX COOLING W/ DIGITAL SCROLL COMPRESSOR.

# HVAC AUTOMATIC CONTROLS I



APPLICATION TABLE	
CONSTANT VOLUME ENERGY RECOVERY UNIT	
ERV-1&2	

### CONSTANT VOLUME ENERGY RECOVERY UNIT SEQUENCE OF OPERATION

THE ENERGY RECOVERY UNIT SHALL BE CONTROLLED THROUGH THE EMS SYSTEM. THE SEQUENCE LISTED BELOW IS REVERSIBLE UNLESS NOTED OTHERWISE.

**OCCUPIED HOURS:**  
 THE ENERGY RECOVERY UNIT SUPPLY FAN SHALL BE ENERGIZED AND OPERATE CONTINUOUSLY. THE UNITS EXHAUST FAN SHALL BE ENERGIZED AND OPERATE CONTINUOUSLY. THE UNITS ENERGY RECOVERY WHEEL SHALL BE ENERGIZED AND OPERATE CONTINUOUSLY.

THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE RESET FROM ITS MINIMUM SETPOINT, 55°F (ADJUSTABLE) TO ITS MAXIMUM SETPOINT, 75°F (ADJUSTABLE), AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT, 75°F (ADJUSTABLE) IN COOLING MODE AND 68°F (ADJUSTABLE) IN HEATING MODE.

IF COOLING IS REQUIRED AND THE EXHAUST AIR ENTHALPY IS HIGHER THAN THE OUTDOOR TEMPERATURE, THE HEAT RECOVER WHEEL SHALL BE DEENERGIZED FOR ECONOMIZER OPERATION. IF FURTHER COOLING IS REQUIRED, THE STAGES OF DX COOLING SHALL OPERATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT. IF THE EXHAUST AIR ENTHALPY IS LOWER THAN THE OUTDOOR AIR ENTHALPY, THE HEAT RECOVERY WHEEL WILL BE ENERGIZED AND THE STAGES OF DX COOLING SHALL OPERATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT.

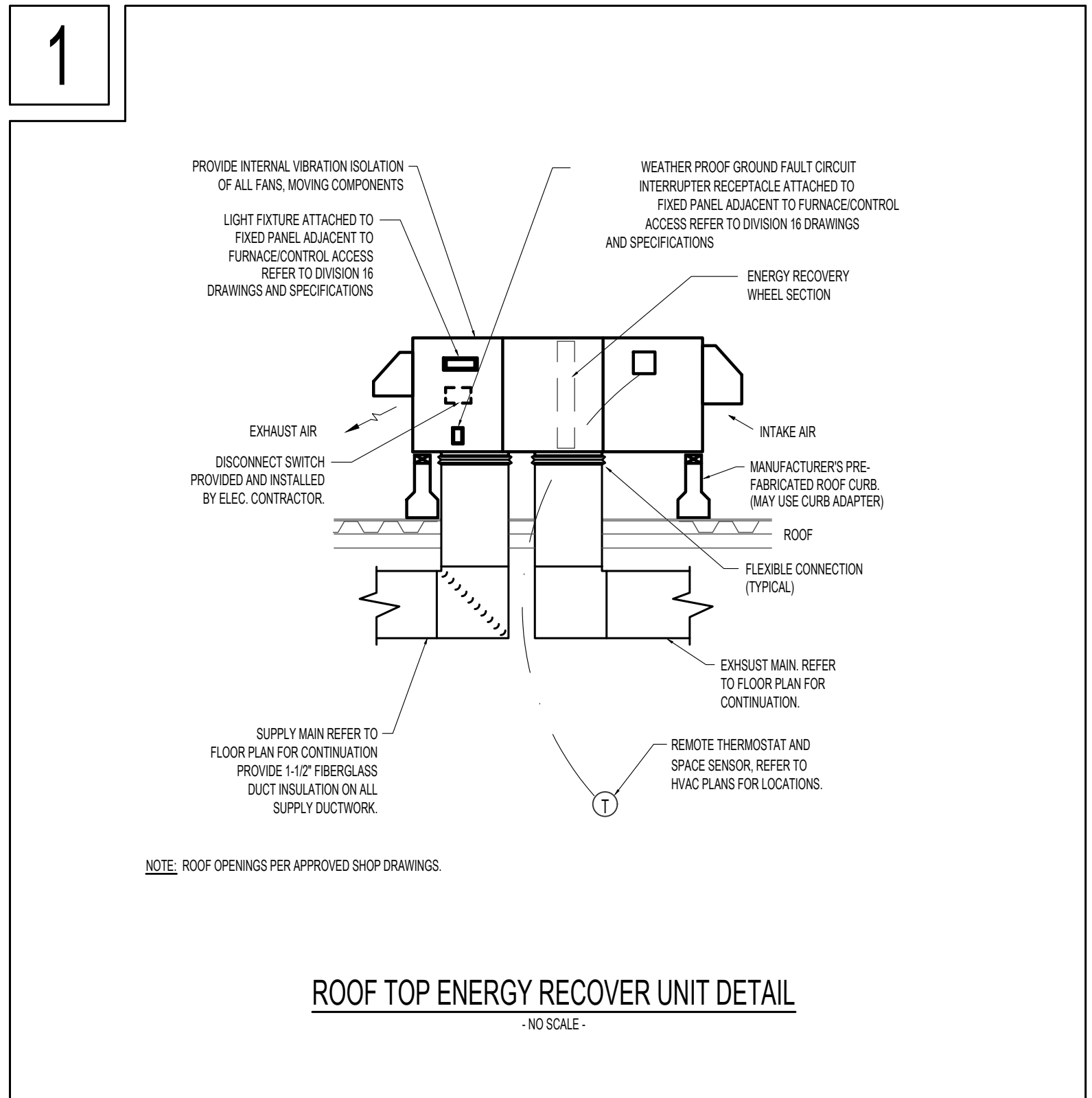
DEFROST CONTROL SHALL BE PROVIDED THROUGH THE UNITS PACKAGED CONTROLS.

**UNOCCUPIED HOURS:**  
 THE ENERGY RECOVERY UNIT SUPPLY AND RETURN FANS SHALL BE DEENERGIZED.

HEATING AND COOLING SHALL BE LOCKED OUT DURING UNOCCUPIED HOURS.

**NOTE:**  
 EXISTING BUILDING MANAGEMENT SYSTEM IS AND OVER CONTROLS CONTINUUM. ALL NEW SEQUENCES SHALL BE MONITORED/CONTROLLED THROUGH EXISTING HOAD OND; COMPLETE WITH DYNAMIC GRAPHICS, SOFTWARE AND ALARMING.

# HVAC DETAILS



### ROOF TOP ENERGY RECOVER UNIT DETAIL

-NO SCALE-

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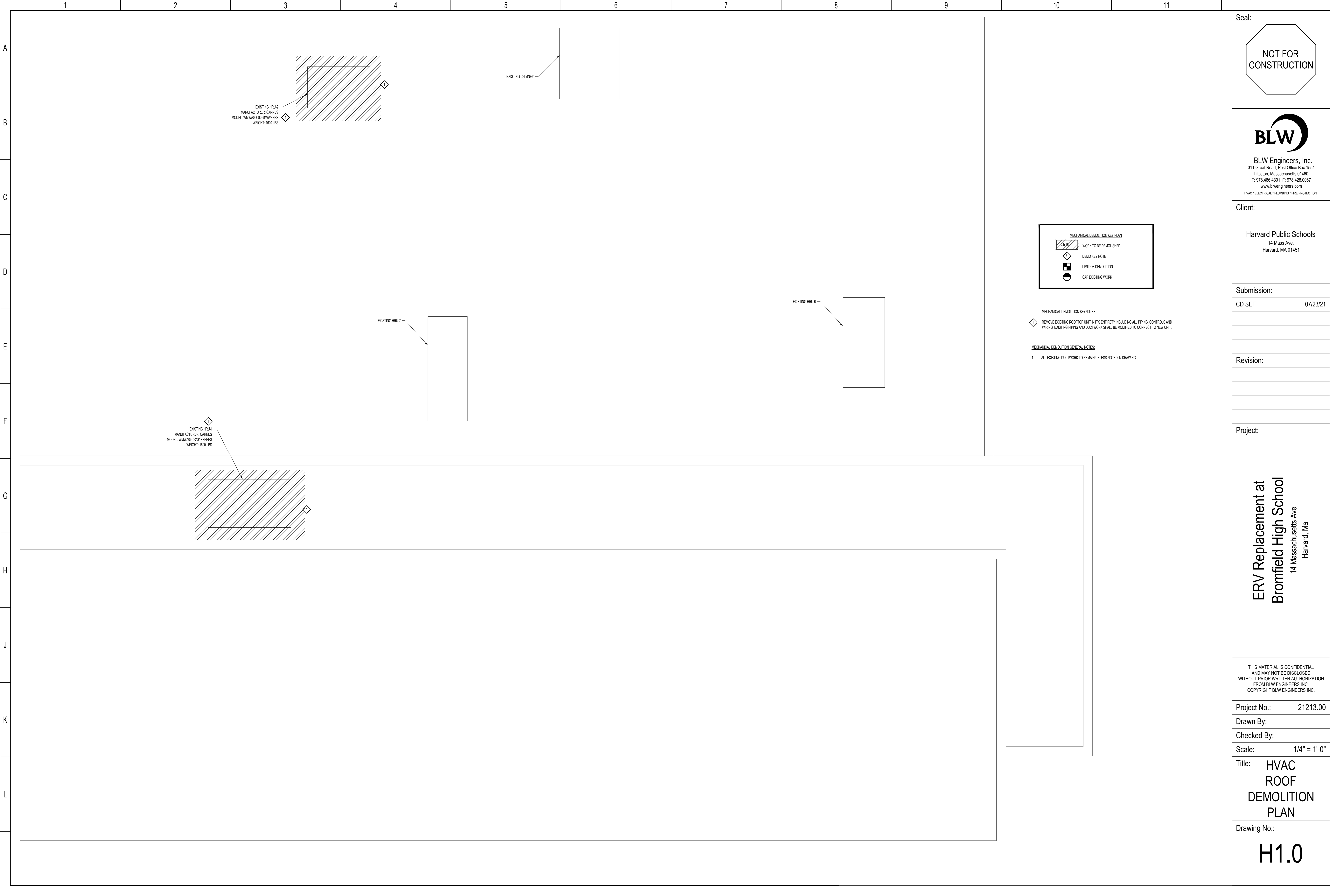
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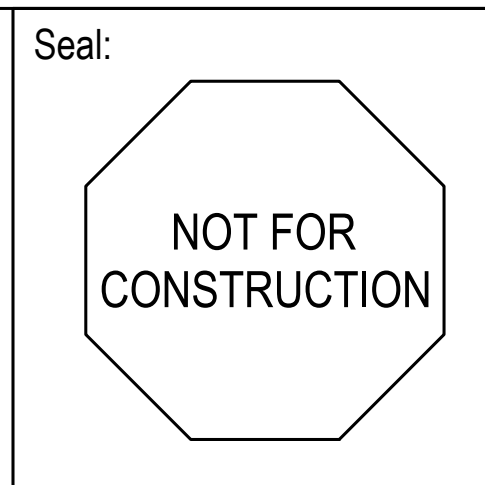
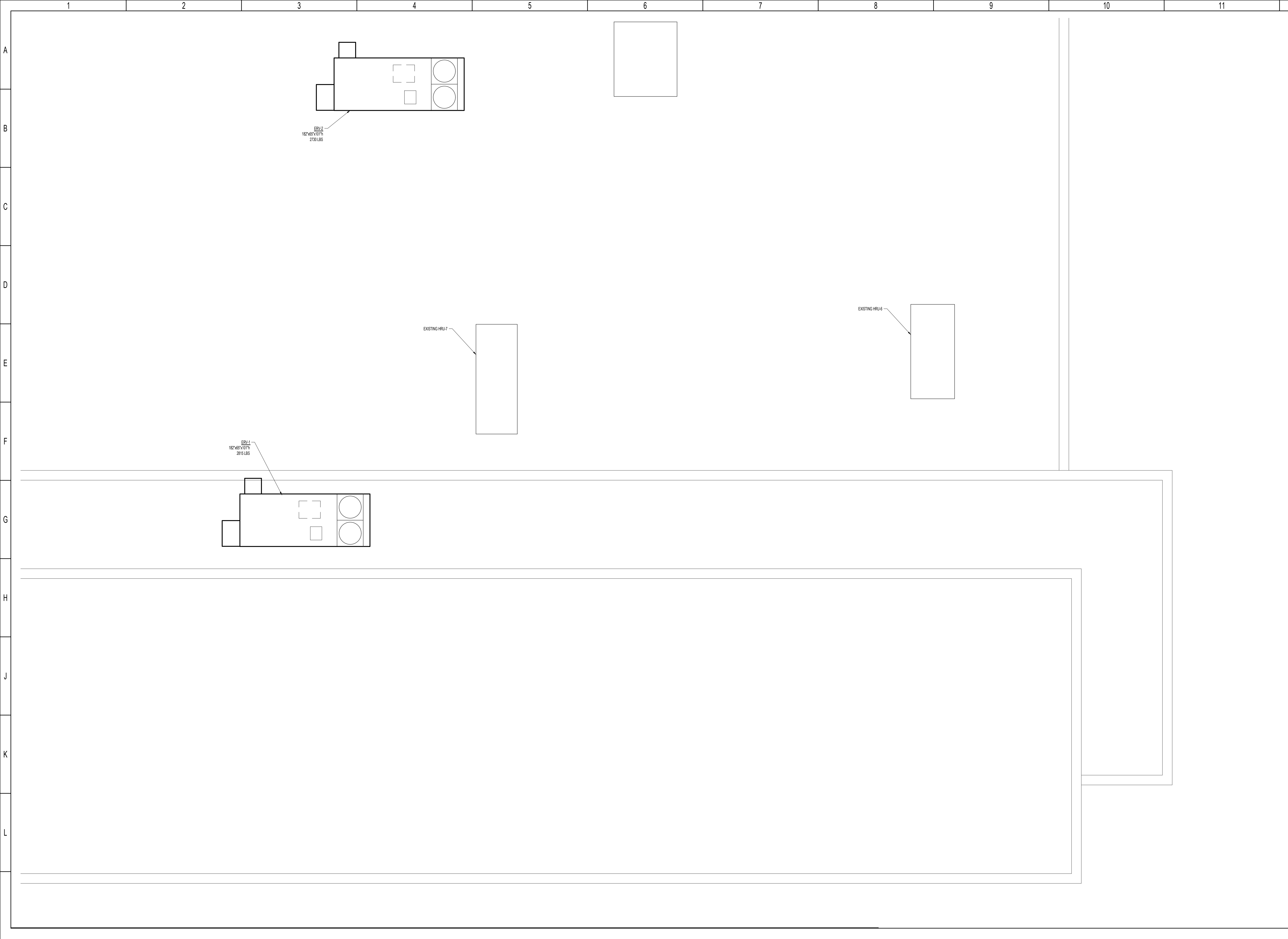
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Title: **HVAC  
 ROOF  
 DEMOLITION  
 PLAN**

Drawing No.:  
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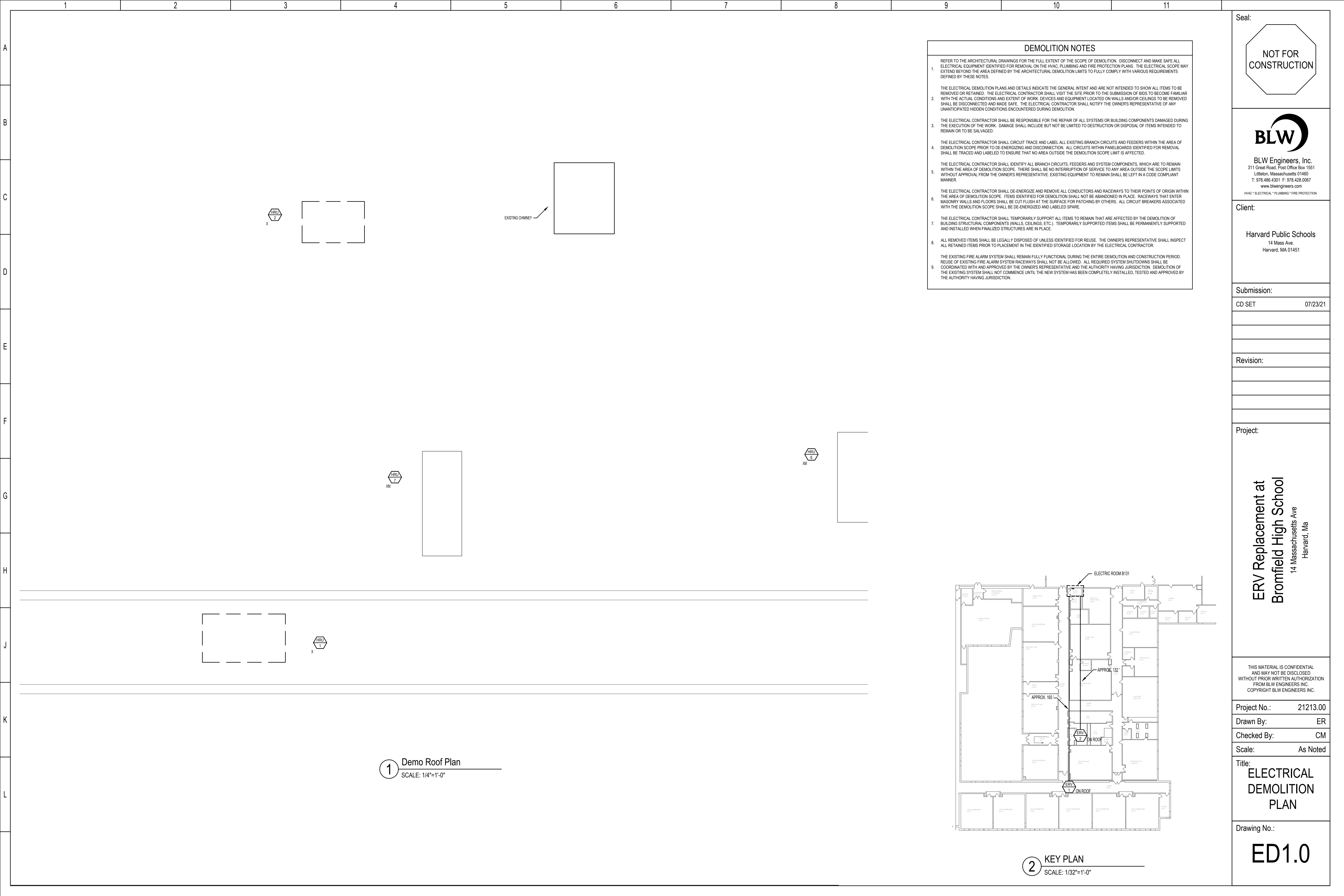
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Title: HVAC  
 ROOF  
 NEW WORK  
 PLAN

Drawing No.:

**H2.0**

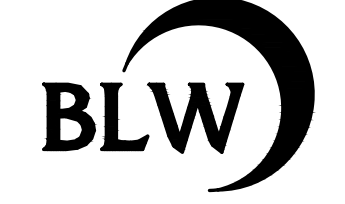




- DEMOLITION NOTES**
- REFER TO THE ARCHITECTURAL DRAWINGS FOR THE FULL EXTENT OF THE SCOPE OF DEMOLITION. DISCONNECT AND MAKE SAFE ALL ELECTRICAL EQUIPMENT IDENTIFIED FOR REMOVAL ON THE HVAC, PLUMBING AND FIRE PROTECTION PLANS. THE ELECTRICAL SCOPE MAY EXTEND BEYOND THE AREA DEFINED BY THE ARCHITECTURAL DEMOLITION LIMITS TO FULLY COMPLY WITH VARIOUS REQUIREMENTS DEFINED BY THESE NOTES.
  - THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
  - THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF THE WORK. DAMAGE SHALL INCLUDE BUT NOT BE LIMITED TO DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR TO BE SALVAGED.
  - THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
  - THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
  - THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINTS OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY OTHERS. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE-ENERGIZED AND LABELED SPARE.
  - THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.
  - ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
  - THE EXISTING FIRE ALARM SYSTEM SHALL REMAIN FULLY FUNCTIONAL DURING THE ENTIRE DEMOLITION AND CONSTRUCTION PERIOD. REUSE OF EXISTING FIRE ALARM SYSTEM RACEWAYS SHALL NOT BE ALLOWED. ALL REQUIRED SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER'S REPRESENTATIVE AND THE AUTHORITY HAVING JURISDICTION. DEMOLITION OF THE EXISTING SYSTEM SHALL NOT COMMENCE UNTIL THE NEW SYSTEM HAS BEEN COMPLETELY INSTALLED, TESTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.

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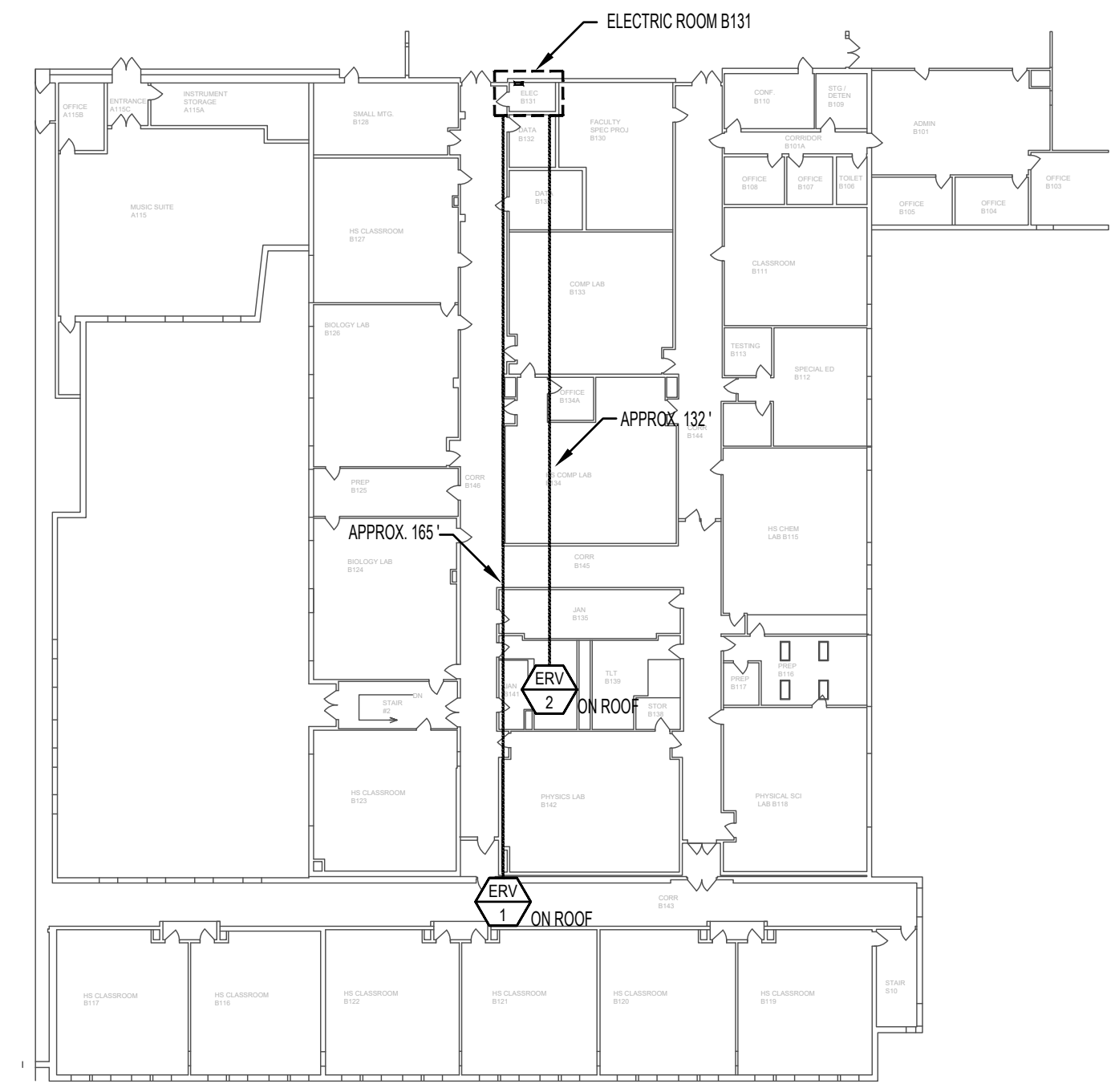
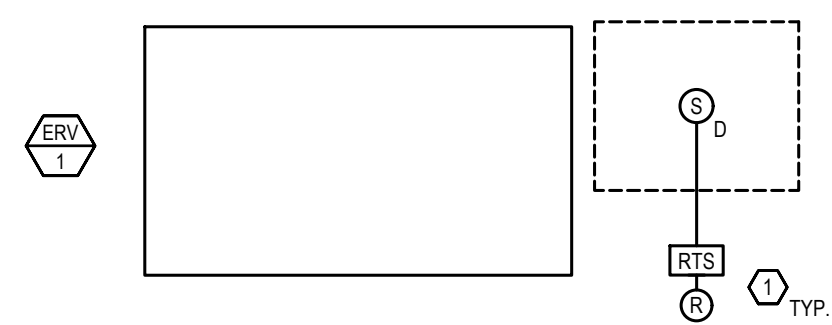
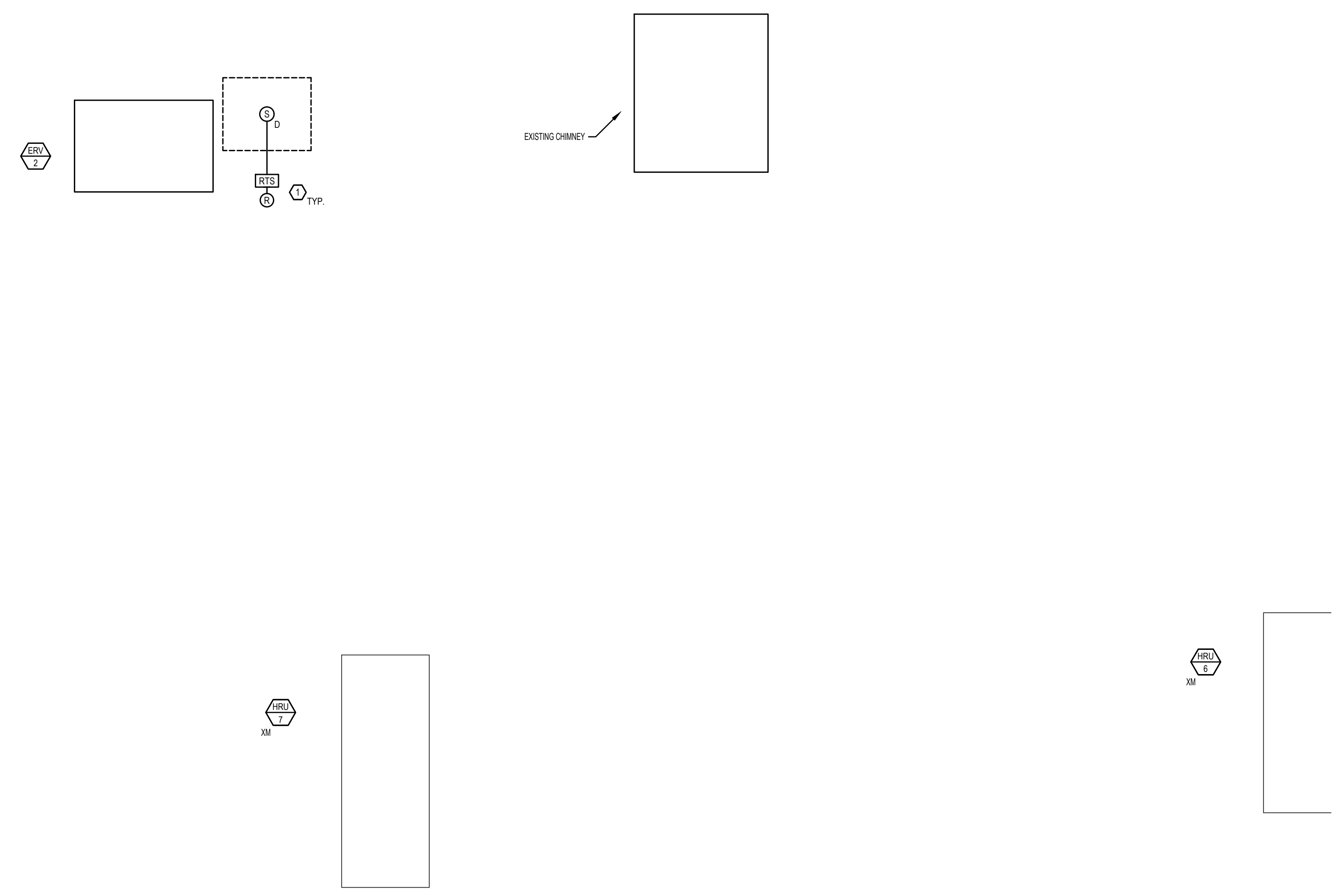
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 ELECTRICAL  
 DEMOLITION  
 PLAN

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 ED1.0

**1** Demo Roof Plan  
 SCALE: 1/4"=1'-0"

**2** KEY PLAN  
 SCALE: 1/32"=1'-0"

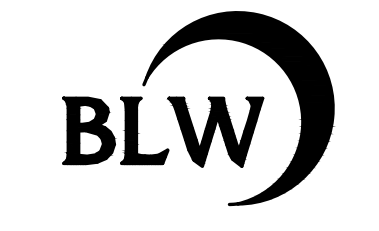
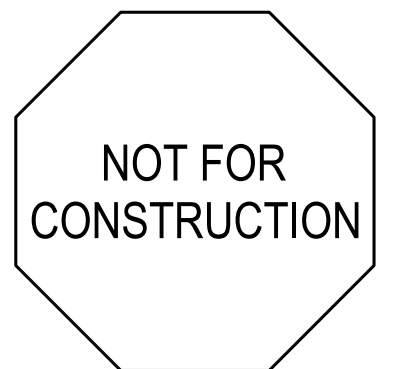
**SHEET NOTES:**  
1. COORDINATE EXACT LOCATION WITH FIRE ALARM.



**1** New Work Roof Plan  
SCALE: 1/4"=1'-0"

**2** KEY PLAN  
SCALE: 1/32"=1'-0"

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**ELECTRICAL  
NEW WORK  
PLAN**

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